

Final

**ENVIRONMENTAL ASSESSMENT FOR
DECENTRALIZATION OF CENTRAL HEAT PLANT**



**United States Air Force
Dover Air Force Base, Delaware
436th Airlift Wing**

August 2005

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ACRONYMS AND ABBREVIATIONS

436 AW	436th Airlift Wing	NAAQS	National Ambient Air Quality Standards
AAQS	Ambient Air Quality Standards	NCP	National Contingency Plan
ACAM	Air Force Conformity Applicability Model	NEPA	National Environmental Policy Act
ACM	Asbestos Containing Material	NHPA	National Historic Preservation Act
AFB	Air Force Base	NO ₂	Nitrogen Dioxide
AFI	Air Force Instruction	NO _x	Nitrogen Oxides
AFOSI	Air Force Office of Special Investigations	NPDES	National Pollutant Discharge Elimination System
Air Force	United States Air Force	NPL	National Priority List
AMC	Air Mobility Command	NRHP	National Register of Historic Places
AQCR	Air Quality Control Region	O ₃	ozone
AST	Aboveground Storage Tank	OSHA	Occupational Safety and Health Administration
BTUs	British Thermal Units	P.L.	Public Law
CAA	Clean Air Act	Pb	Lead
CAP	Civil Air Patrol	PCB	Polychlorinated Biphenyl
CEQ	Council on Environmental Quality	PM _{2.5}	Particulate Matters Less Than 2.5 Micrometers in Diameter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PM ₁₀	Particulate Matters Less Than 10 Micrometers in Diameter
CES/CEV	Civil Engineering Squadron/Civil Environmental Flight	POL	Petroleum, Oil, and Lubricant
CFR	Code of Federal Regulations	POV	Privately-Owned Vehicle
CO	Carbon Monoxide	ppm	parts per million
CZMA	Coastal Zone Management Act	PSD	Prevention of Significant Deterioration
DERP	Defense Environmental Restoration Program	RCRA	Resource Conservation and Recovery Act
DHR	Department of Historic Resources	ROI	Region of Influence
DNHI	Delaware Natural Heritage Inventory	SAC	Strategic Air Command
DNREC	Department of Natural Resources and Environmental Control	SHPO	State Historic Preservation Office
DoD	Department of Defense	SIP	State Implementation Plan
DSWA	Delaware Solid Waste Authority	SO ₂	Sulfur Dioxide
EA	Environmental Assessment	SO _x	Sulfur Oxides
EIAP	Environmental Impact Analysis Process	SR	State Route
EO	Executive Order	U.S.	United States
EPCRA	Emergency Planning and Community Right-to-Know Act	USACE	United States Army Corps of Engineers
ERP	Environmental Restoration Program	USC	United States Code
ESA	Endangered Species Act	USEPA	United States Environmental Protection Agency
FFA	Federal Facilities Agreement	USFWS	United States Fish and Wildlife Service
MFH	Military Family Housing	UST	Underground Storage Tank
		VOC	Volatile Organic Compound
		µg/m ³	Micrograms per Cubic Meter



**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 436TH AIRLIFT WING (AMC)**

MEMORANDUM FOR 436 CES/CEV

FROM: 436 MSG/CC

SUBJECT: Finding of No Significant Impact (FONSI)-Decentralization of Central Heat Plant

1. Dover AFB is proposing to demolish the Central Heat Plant and install individual boilers in 85 buildings currently serviced by the plant.
2. An environmental assessment, which is attached, was drafted and demonstrates that there are no significant environmental impacts from the proposed action. An environmental assessment was available for public review and comment from 31 July 2005 through 30 August 2005.
3. This document was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations of 1978, and Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*. AFI 32-7061 addresses implementation of the NEPA and directs Air Force officials to consider the environmental consequences of any proposal as part of the decision-making process. This instruction has been recently amended and appears, as amended, in 32 CFR Part 989. It was determined that an environmental impact statement is not necessary. No further environmental documentation is necessary.
4. I have evaluated the attached environmental assessment and find no significant impacts on the quality of the human or natural environment from the proposed action.

A handwritten signature in black ink, appearing to read "R. J. King", is positioned above the printed name and title.

ROBERT J. KING, Colonel, USAF
Commander, 436th Mission Support Group

Attachment:

1. Environmental Assessment

Final

**ENVIRONMENTAL ASSESSMENT FOR
DECENTRALIZATION OF CENTRAL HEAT PLANT**

**United States Air Force
Dover Air Force Base, Delaware
436th Airlift Wing**

August 2005

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) describes the potential environmental consequences resulting from a proposal to decentralize the heating of various buildings at Dover Air Force Base (AFB), Delaware. This action would involve the demolition of the existing Central Heat Plant (Building 617) with associated aboveground fuel storage tanks and the installation of individual natural gas boilers. The Proposed Action also includes installation of additional natural gas distribution lines.

ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This EA has been prepared by the United States Air Force (Air Force), Air Mobility Command (AMC) and the 436th Airlift Wing (436 AW) in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations implementing NEPA, and Air Force Instruction (AFI) 32-7061 (*The Environmental Impact Analysis Process*, 32 Code of Federal Regulations [CFR] Part 989).

PURPOSE AND NEED FOR ACTION

Dover AFB provides heat to numerous facilities within the cantonment area from a dual fuel fired (natural gas and #6 heating oil) central heat plant. As a result of an evaluation of energy saving opportunities at Dover AFB, it was determined an improved method of supplying heat more efficiently and for less energy would be to construct individual gas-fired boilers in the approximately 85 buildings within the cantonment area currently served by the Central Heat Plant.

PROPOSED ACTION AND ALTERNATIVES

Dover AFB proposes to decentralize the supply of steam heat to approximately 85 buildings within the cantonment area from the Central Heat Plant to individual gas-fired boilers in each building. Individual natural gas-fired boilers will be installed in buildings currently served by the Central Heat Plant, new natural gas distribution lines will be installed to serve the boilers, and the existing Central Heat Plant and associated aboveground fuel storage tanks will be demolished using standard industry practices.

Under the No Action alternative, the proposed renovation would not occur. The current method of HTHW heat distribution would remain and the dual/fired system would continue operation and energy savings and efficiencies would not be realized.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This EA provides an analysis of the potential environmental consequences associated with the Proposed Action, Alternative One, and the No Action alternative. Six resource categories

received thorough evaluation to identify potential environmental consequences. As indicated in Chapter 4.0, none of the alternatives would result in significant impacts to any resource area.

Land Use. The Proposed Action and Alternative One would be consistent with surrounding land uses and provide future development opportunities. There would be no adverse significant environmental consequences to this resource.

Transportation. Under the Proposed Action and Alternative One, overall base vehicular circulation would not be impacted. Truck traffic associated with the demolition and construction would be directed through the North Gate. Although truck traffic may lead to some degradation of these road surfaces and occasional congestion at the North Gate, these adverse effects would be short-term and not significant.

Visual Resources. Demolition of Central Heat Plant and associated aboveground storage tanks (ASTs) considered under the Proposed Action and Alternative One would benefit the visual resources of the base with no negative effect to the existing visual and natural character of the base.

Cultural Resources. With the implementation of the Proposed Action or Alternative One, no adverse impacts to historic architectural resources, archaeological resources or traditional resources are anticipated.

Physical Resources. With the implementation of the Proposed Action or Alternative One, the overall ecological effect would be insignificant. Demolition would disturb an area that is previously developed or landscaped. There would be no impacts to wetlands with the use of directional drilling for the installation of natural gas pipelines. No special species or sensitive habitats are expected to be impacted. Standard demolition and construction practices would be applied to control fugitive dust, sedimentation, and erosion during demolition, thereby avoiding secondary effects to any wetlands or freshwater aquatic communities.

Demolition of the existing structures and construction of new natural gas pipelines and boilers are not expected to significantly affect the water quality of the St. Jones River and Chesapeake Bay. Silt fences, storm drain inlet and outlet protection, and other appropriate standard construction practices would be employed to control storm water runoff and soil erosion from the project areas. There would be no significant impacts to water resources from point sources or non-point sources.

Hazardous Materials and Waste Management. Demolition of the Central Heat Plant and the installation of the new boilers and construction of new natural gas supply lines may require the use of hazardous materials by contractor personnel. Project contractors would comply with federal, state, and local environmental laws. Prior to any demolition activities associated with the Proposed Action and Alternative One, the Central Heat Plant and associated appurtenances would be re-inspected to identify all asbestos, including Category I and Category II non-friable asbestos-containing material (ACM) and lead-containing materials. All waste ACM and lead-

containing materials would be transported and disposed of in accordance with applicable federal and state regulations. Demolition of the ASTs will require closure in accordance with the State of Delaware "Regulations Governing Aboveground Storage Tanks." Additionally, the Air Force is required to file an "Aboveground Storage Tank Activity Notification" form with the Delaware Department of Natural Resources and Environmental Control.

Noise. Implementation of the Proposed Action and Alternative One would have minor, temporary increases in localized noise levels in the vicinity of the Central Heat Plant during demolition activities. Noise would be similar to typical construction/demolition noise, last only the duration of the specific demolition activities, and could be reduced by the use of equipment sound mufflers and restricting construction activity to normal working hours. Noise from truck traffic hauling demolition materials away from the site would not affect base residents because the North Gate would provide demolition contractor and construction vehicle access. The noise disruptions would be temporary and would be limited to daytime hours; therefore, impacts are considered insignificant.

Air Quality. Implementation of the Proposed Action and Alternative One would result in demolition and construction-related air emissions generated on base which are temporary in nature, which are not expected to adversely impact air quality in the region or visibility at any PSD Class I areas in the vicinity of the base. The estimated demolition, construction and operational emissions are below *de minimis* thresholds established by the Federal Conformity Rule and would conform to the Delaware State Implementation Plan (SIP). Moreover, the operational emissions may result in a net benefit to the environment if low NO_x burners are used on the replacement boilers.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force (Air Force), 436th Airlift Wing (436 AW) proposes to decentralize the heating of various buildings at Dover Air Force Base (AFB), Delaware. This Environmental Assessment (EA) has been prepared to analyze the potential environmental consequences associated with the Proposed Action and alternatives in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 *et seq.*). This document was prepared in accordance with the following:

- Regulations established by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508).
- Air Force Instruction (AFI) 32-7061 (*The Environmental Impact Analysis Process* [EIAP], as codified in 32 CFR Part 989).

Section 1.2 provides background information that briefly describes Dover AFB. The purpose and need for the Proposed Action are described in Section 1.3.

A detailed description of the Proposed Action, Alternative One, and the No Action alternative is provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected if the proposal were implemented. Chapter 4.0 describes how those resources would be affected by implementation of the Proposed Action and alternative, or the No Action alternative. Chapter 5.0 addresses the cumulative effects of the Proposed Action, as well as other recent past, current, and future actions that may be implemented in the region of influence (ROI) for the Proposed Action.

1.2 BACKGROUND

Dover AFB is located in the center of the Delmarva Peninsula, approximately three miles south of downtown Dover, the capital of Delaware. The installation is located partially within the corporate limits of the City of Dover and the unincorporated areas within Kent County. This includes approximately 3,300 acres of land, of which the majority lays within the Dover corporate limits, 589 acres under grants or easements and another 11 acres that are managed under lease agreements. Primary roadway access to the base from the city of Dover and southern Delaware is via United States (U.S.) 113, State Route (SR) 10, and SR 1. SR 9 runs along the eastern edge of the installation (Figure 1-1).

The base (Figure 1-2) is home to the 436 Airlift Wing (AW), commonly known as the “Eagle Wing,” and the 512th Airlift Wing Reserve, which both serve as host units on base, and together form the “Dover Team.” The base is part of Air Mobility Command (AMC), and employs over 8,000 military, civilian, and reserve personnel. Dover AFB is the third-largest employer in the

state, and manages more than \$5 billion worth of defense assets. The Dover Team mission is to provide combat ready professionals and equipment to enhance global reach for America. This is accomplished by providing airlift of troops, cargo, military equipment, and passengers, as well as participating in air and airdrop of troops and supplies for augmented tactical forces. The 436 AW is the only combat-ready C-5 unit capable of such duties.

There are numerous tenant units stationed at Dover AFB. These tenant units include the Air Force Office of Special Investigations (AFOSI) Detachment 306, which provides investigative services at Dover; the U.S. Army Escort Detachment, which insures that the remains of military personnel received by the Air Force Port Mortuary from overseas are properly safeguarded; the Armstrong Laboratory Groundwater Remediation Field Laboratory; Defense Courier Service Station Dover; the Civil Air Patrol (CAP); Army Air Force Exchange Service; and the Commissary.

1.3 PURPOSE AND NEED

The purpose of this action is to demolish the existing fuel oil/natural gas-fired Central Heat Plant as shown in Figure 1-3 and provide alternative sources of heat to the 85 buildings that are currently served by the Central Heat Plant.

Dover AFB has identified the need to reduce energy use and as well as operational and maintenance expenditures associated with the heating of buildings within the main portion of the base.

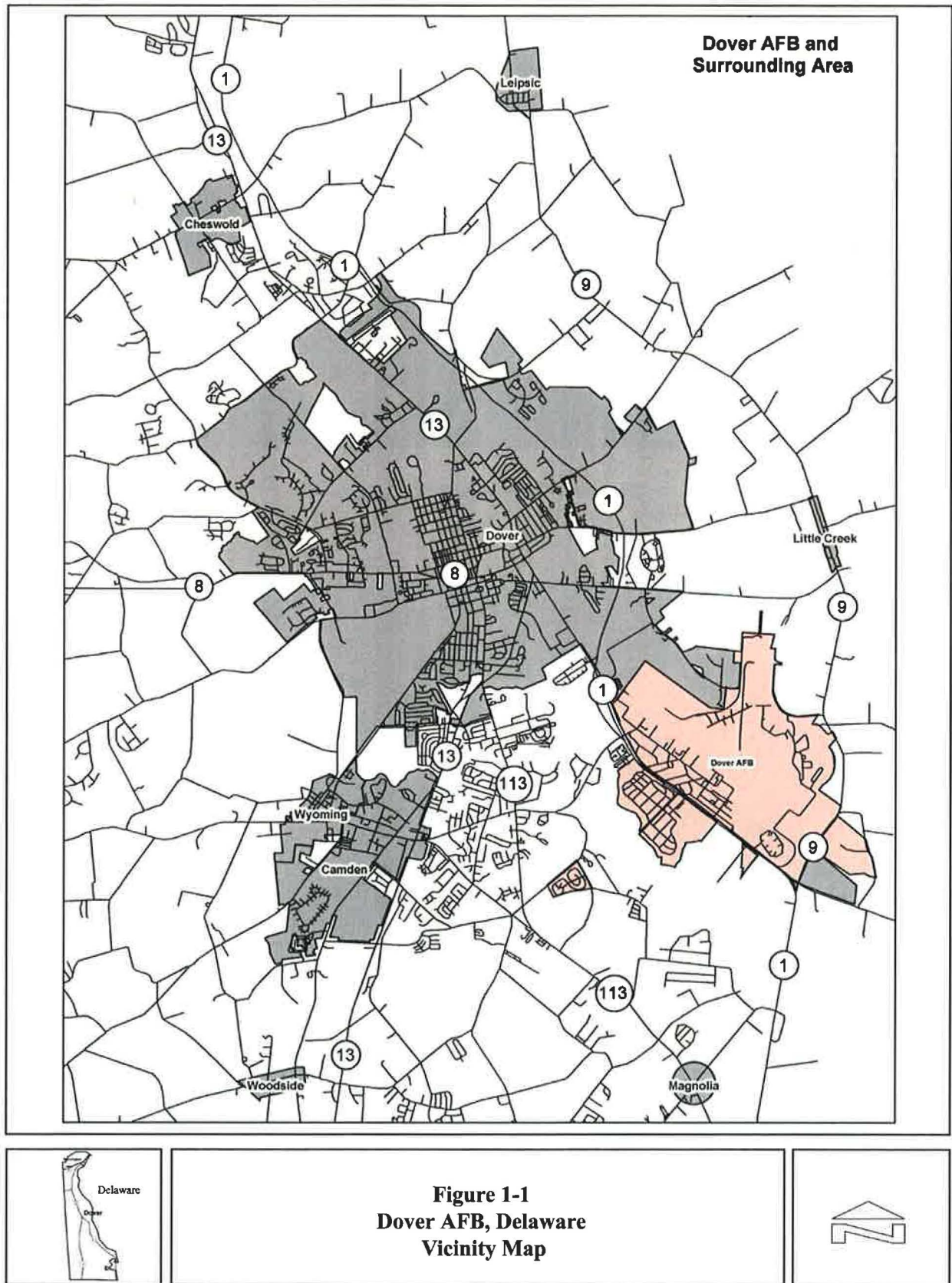




Figure 1-2. Dover AFB, Delaware



Figure 1-3. Central Heat Plant

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Dover AFB proposes to decentralize the heating of various buildings at Dover AFB, Delaware. This EA evaluates the Proposed Action, Alternative One, and the No Action alternative.

2.1 PROPOSED ACTION

Dover AFB proposes to install individual gas-fired boilers in 85 buildings within the cantonment area that are currently provided with a supply of high temperature hot water (HTHW) heat from the Central Heat Plant. Table 2-1 lists the buildings by distribution zone currently supplied by the Central Heat Plant. Installation of the boilers would take place within existing utility areas in each building requiring minor demolition and renovation activities. Upgrades and installation of new natural gas distribution lines would be required in portions of the base. Existing underground HTHW lines would be capped and remain in place. To minimize any potential disruptions to onbase traffic movements, directional drilling would be used to place the pipelines under heavily traveled roadways.

The Central Heat Plant would be demolished in sections and the five aboveground storage tanks (ASTs) (two 150,000-gallon and three 25,000-gallon) would be removed using the following practices:

- All asbestos-containing materials (ACM) would be removed and disposed of in a landfill approved for receipt of ACMs.
- The existing AST supply lines would be isolated from the Central Heat Plant.
- Fuel contained in the tanks would be recovered and recycled appropriately. All supply lines would be cleaned of residual fuel and fuel residue in preparation for removal.
- All hazardous materials (such as mercury switches, polychlorinated biphenyls [PCBs] or contaminated system water) would be identified and removed with disposal in accordance with Federal and Delaware hazardous waste regulations and the Base's Hazardous Waste, Universal Waste and Used Petroleum Management Plan (436 AW OPLAN 32-3).
- All demolition material that can be recycled would be sent to a qualified recycler. All material not suitable for recycling would be disposed of in an accepted manner in a landfill approved for receipt of construction and demolition materials.

Table 2-1. Buildings Heated By Central Heat Plant

<i>Distribution Zone #1</i>	<i>Distribution Zone #2</i>	<i>Distribution Zone #3</i>	<i>Distribution Zone #4</i>
Building # 200	Building # 260	Building # 607	Building # 633
Building # 201	Building # 261	Building # 608	Building # 635
Building # 202	Building # 262	Building # 609	Building # 638
Building # 203	Building # 263	Building # 615	Building # 639
Building # 204	Building # 300	Building # 617	
Building # 205	Building # 304	Building # 707	
Building # 206	Building # 401	Building # 708	
Building # 212	Building # 402	Building # 709	
Building # 300	Building # 403	Building # 710	
Building # 420	Building # 404	Building # 711	
Building # 428	Building # 405	Building # 712	
Building # 500	Building # 406	Building # 714	
Building # 501	Building # 407	Building # 715	
Building # 503	Building # 408	Building # 716	
Building # 505	Building # 409	Building # 717	
Building # 510	Building # 419	Building # 719	
Building # 519	Building # 430	Building # 721	
Building # 520	Building # 435	Building # 722	
Building # 582	Building # 439	Building # 725	
Building # 585	Building # 442	Building # 726	
Building # 600	Building # 445	Building # 727	
Building # 605	Building # 447	Building # 780	
Building # 701	Building # 469	Building # 781	
Building # 702	Building # 479	Building # 792	
Building # 704	Building # 480	Building # 793	
Building # 778	Building # 524	Building # 794	
Building # 779	Building # 800		
	Building # 802		

Notes: As of February 5, 2003, 85 buildings served by Central Heat Plant. Either Zone 1 or Zone 2 can supply building #300.

Prior to demolition, the contractor would establish a haul route for the removal of materials from the site, establish a safe buffer zone around the building, and create a material handling area. The proposed demolition would involve complete dismantling and removal of all facility structures, equipment and machinery. To ensure proper handling and disposition of the waste, all actions would be completed in accordance with applicable regulatory requirements. All utilities would be capped or disconnected. The site would be restored to grade and planted with an appropriate land cover to prevent soil erosion and sediment runoff. Any landscaped areas that may be disturbed by the demolition would be restored to prevent any long-term soil erosion.

2.2 ALTERNATIVE ONE

With the implementation of this alternative Dover AFB would propose to decentralize the supply of HTHW heat to approximately 69 buildings within the cantonment area from the Central Heat Plant to individual gas-fired boilers in each building. Radiant heating systems would be installed in a group of 16 buildings. As identified under the Proposed Action the existing Central Heat Plant building (Facility 617) and ASTs used for storage of heating oil (Facilities 618 and 620) would be demolished. Additional natural gas pipelines would be installed to provide service to the new boilers.

2.3 NO ACTION ALTERNATIVE

Under the No Action alternative, the proposed demolition of the Central Heat Plant (Building 617) would not occur, the individual building boilers would not be installed, and the natural gas distribution system would not be expanded. The current method of HTHW heat distribution would remain and the dual/fired system would continue operation and energy savings, energy efficiencies and maintenance improvements would not be realized. The cost of operations and maintenance of the Central Heat Plant would continue to be incurred. Air quality improvements resulting from the conversion from No. 6 Fuel Oil/Natural Gas combinations to strictly natural gas would not be realized, and the spill potential from the existing ASTs would not be eliminated.

2.4 ALTERNATIVE CONSIDERED BUT NOT CARRIED FORWARD

In addition to the Proposed Action and the alternatives discussed above, other alternatives were evaluated to determine if they could meet the need of reducing energy use and operational and maintenance expenditures. These alternatives were found to be infeasible or unreasonable, and therefore eliminated detailed consideration. These alternatives include the following:

- Privatization of the natural gas system within the base to reduce operational and maintenance expenditures.
- Operation of the Central Heat Plant by a private contractor to reduce operational and maintenance expenditures.

2.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The EIAP includes the review of all information pertinent to the Proposed Action and reasonable alternatives and provides a full and fair discussion of potential consequences to the natural and human environment. The process includes involvement with the public and agencies to identify possible consequences of an action, as well as the focusing of analysis on environmental resources potentially affected by the Proposed Action or alternatives.

2.4.1 Public and Agency Involvement

To facilitate public involvement in this project, the Air Force prepared and published a newspaper advertisement announcing the availability of the Draft EA for a 30 day public review. The Draft EA was also distributed to the Dover Public Library. No public comments were received during the public review period.

2.4.2 Regulatory Compliance

This EA has been prepared to satisfy the requirements of NEPA (Public Law [P.L.] 91-190, 42 USC 4321 *et seq.*) as amended in 1975 by P.L. 94-52 and P.L. 94-83. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. In addition, this document was prepared in accordance with AFI 32-7061, which implements Section 102 (2) of NEPA and regulations established by the CEQ (40 CFR 1500-1508; 32 CFR Part 989).

2.4.3 Permit Requirements

This EA has been prepared in compliance with NEPA; other federal statutes, such as the Clean Air Act (CAA) and the Clean Water Act; Executive Orders (EOs), and applicable state statutes and regulations. Table 2-2 summarizes applicable federal, state, and local permits and the potential for change to the permits due to the Proposed Action or alternatives.

In addition to this EA being prepared for the decision maker and the interested public, it is also a tool for Air Force personnel to ensure compliance with all regulatory requirements from proposal through project implementation.

Table 2-2. Environmental Related Permitting

<i>Type of Permit or Regulatory Requirement</i>	<i>Requirement</i>	<i>Agency</i>
Clean Air Act, New Source Review and Title V Permitting	Identify and submit any applicable permit applications for new boilers and for shutdown of existing boilers	Delaware Department of Natural Resources & Environmental Control
Clean Water Act	Sediment and Storm water Management Plan	Delaware DNREC, Division of Water Resources
Aboveground Storage Tank Activity Notification	Requirement to notify of change in status of tank(s)	Delaware DNREC, Division of Air and Waste Management

2.5 COMPARISON OF ALTERNATIVES

Table 2-3 summarizes the potential environmental impacts of the Proposed Action and alternatives, based on the impact analyses presented in Chapter 4.0. In no instance would the potential environmental consequences be significant with the implementation of the Proposed Action or alternatives.

**Table 2-3. Summary of Potential Environmental Impacts
of Proposed Action and Alternatives**

<i>Resource</i>	<i>Proposed Action</i>	<i>Alternative One</i>	<i>No Action Alternative</i>
Land Use	0/+	0/+	0
Transportation	-	-	0
Visual	+	+	-
Cultural Resources	0	0	0
Physical Resources ¹	-	-	0
Hazardous Materials and Waste Management	-	-	0
Noise	-	-	0
Air Quality	+	+	0
1. Physical resources includes Biological and Water Resources - Adverse, but not significant impact + Positive/beneficial impact 0 No change			

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3.0 AFFECTED ENVIRONMENT

This chapter describes relevant existing environmental conditions at Dover AFB for resources potentially affected by the Proposed Action, alternative, and No Action alternative described in Chapter 2.0. In compliance with guidelines contained in the NEPA, CEQ regulations, and AFI 32-7061, the description of the existing environment focuses on those environmental resources potentially subject to impacts. These resources and conditions are: land use, including visual and transportation; cultural resources; physical resources, including water and biological resources; hazardous materials and waste; noise, and air quality. The expected geographic scope of potential impacts, known as the ROI, is defined for each resource analyzed.

RESOURCES ELIMINATED FROM DETAILED CONSIDERATION

Several resources were not evaluated in this EA because it was determined that implementation of the Proposed Action is unlikely to affect them. These resources include airspace, safety, earth resources, recreation, socioeconomics and environmental justice. A brief explanation of the reasons why each resource has been eliminated from further consideration in this EA is provided below.

Airspace. The demolition and construction associated with the Proposed Action and the alternatives do not involve aircraft or airspace modifications and would not affect airspace.

Safety. Implementation of the Proposed Action or alternatives would not create any unique or unusual safety issues during the demolition of the Central Heat Plant and the interior construction associated with the new boilers. Dover AFB requires as part of each contract that the national safety codes be followed and that the contractor provides barricades, traffic control signs and construction safety signs that conform to the Manual of Uniform Traffic Control Devices for Streets and Highways and the US Army Corps of Engineers safety and health requirements Manual EM 385-1-1.

Earth Resources. Since the proposal involves existing structures and construction within previously developed areas, no impacts to earth resources (e.g., soils, paleontological resources) would occur as a result of the Proposed Action and alternatives. The physical resources section addresses erosion concerns.

Recreation. With the implementation of this Proposed Action and the alternatives, no change in personnel would occur and demolition of the Central Heat Plant and the proposed construction would not affect recreational facilities.

Socioeconomics and Environmental Justice. Implementation of the Proposed Action and alternatives do not include modifications to current manpower authorizations that would affect socioeconomic conditions in the nearby region..

Environmental justice addresses the disproportionately high and adverse human health or environmental effects on minority and low-income populations. Determination of disproportionately high and adverse human health effects are established by identifying the impact on the natural or physical environment and influence on minority and low-income populations. Construction and/or demolition associated with the Proposed Action and alternatives would not create any disproportionately high and significant health and environmental effects on low-income and minority populations on base or in the vicinity of Dover AFB. Therefore, environmental justice was eliminated from further analysis.

3.1 LAND USE

The attributes of land use addressed in this analysis include land use, transportation, and visual resources. Land use focuses on general land use patterns, as well as management plans, policies, ordinances, and regulations. These provisions determine the types of uses that are allowable and identify appropriate design and development standards to address specially designated or environmentally sensitive areas. Transportation addresses roads and circulation. Visual resources present the natural and manufactured features that constitute the aesthetic qualities of an area. The ROI for land use resources consists of the cantonment area of Dover AFB.

3.1.1 Land Use

Land uses on Dover AFB are grouped by function in distinct geographic areas. For example, aircraft operations and maintenance facilities are located in the northern portion of the base. The majority of the residential areas are located off base. The Central Heat Plant site is located at the corner of Fifth and Atlantic Streets in the northwestern portion of Dover AFB.

Adopted plans and programs guide land use planning on Dover AFB. Base plans and studies present factors affecting both on- and off-base land use and include recommendations to assist on-base officials and local community leaders in ensuring compatible development. The *Dover AFB General Plan* (Air Force 2001a) provides an overall perspective concerning development opportunities and constraints and provides guidance relative to the development and use of the Proposed Action site. The preparation of numerous Area Concept Site Plans represents an effort to identify appropriate, necessary redevelopment of currently built-out areas. The base's *Integrated Natural Resource Management Plan* (Air Force 2001b) is used to coordinate natural resource management.

The Coastal Zone Management Act (CZMA) was enacted to develop a national coastal management program that comprehensively manages and balances competing uses of and impacts to any coastal use or resource. The CZMA federal consistency requirement, CZMA section 307, mandates that federal agency activities be consistent to the maximum extent practicable with the enforceable policies of a state management program. The federal consistency requirement applies when any federal activity, regardless of location, affects any land or water use or natural resource of the coastal zone. The question of whether a specific

federal agency activity may affect any natural resource, land use, or water use in the coastal zone is determined by the federal agency.

According to the State of Delaware's Coastal Zone Management Plan, the entire state falls within the state's Coastal Zone area. However, the portion of the state where coastal regulations are strictly enforced lies east of SR 9. While the entire base falls within the State's coastal zone, only the former Bergold farm lies within the heavily regulated enforcement area. The Central Heat Plant and the project area are located outside this area.

3.1.2 Transportation

Principal routes that define the base boundary include South Little Creek Road, SR 9, and U.S. 113/SR 1. SR 10 provides direct access to the North Gate from the west. SR 9 east of the base is a scenic route where development is being discouraged by the county and state.

Access to the base is achieved by way of the two entrance gates, the North and Main Gates. The North Gate is accessed from Route 10, SR 1 and from U.S. 113. The Main Gate is accessed from SR 1 and from Lebanon Road. Lebanon Road provides direct access from the Eagle Heights Military Family Housing (MFH) community into the Main Gate by way of an overpass bridging SR 1. A diamond intersection at SR 1 and Lebanon Road provides for all the required turning movements at that intersection from off and on ramps, which enables motorists to access the Main Gate and the Eagle Heights MFH community. The North Gate is accessed directly from SR 10, northbound SR 1 and southbound 113. Traffic signals control movements at the North Gate.

Atlantic Street serves as the base's major collector road. It handles a significant portion of all of the privately-owned vehicles (POVs) that enter the base and all of the tractor trailers that enter the North Gate destined for the base Aerial Port. Thirteenth Street also serves as a major collector. Other minor collector streets include the 8th Street, Evreux/12th Street loop to Atlantic as well as Eagle Way and Arnold Drive in the commercial area of the base. In Eagle Heights MFH community, Lebanon Road serves as the major collector with Hawthorne, High, and Cypress serving as minor collectors. Carolina Avenue serves as the collector within the Eagle Meadows housing community.

3.1.3 Visual Resources

The north-south airfield at Dover AFB divides the main installation into two primary sections. Open space, recreational areas, and limited amounts of industrial land uses are located to the east of the airfield. The majority of land uses are located west of the airfield. Industrial, airfield operations, administrative, community, medical, and some unaccompanied personnel housing land uses are located between the airfield and U.S. 113. Eagle Heights MFH, temporary lodging quarters, the base golf course, and additional unaccompanied personnel housing are located west of U.S. 113 and east of the St. Jones River. Eagle Meadows MFH (approximately 76 acres)

is located 3.5 miles west of the main gate (west of the St. Jones River) along State Highways 26 and 362 near the town of Lebanon.

Except for the city of Dover to its northwest, Dover AFB is primarily surrounded by agricultural lands, tidal marshes, and a few small rural communities such as Lebanon, Rising Sun, Magnolia, and Kitts Hummock. The city of Dover has a current population of approximately 34,120. State offices are located in the downtown historic Dover Green area. The closest large metropolitan area to Dover AFB is Philadelphia approximately 70 miles north.

Landscaping at Dover AFB varies from areas with mature trees and shrubs to stark areas with young plantings, or no landscaping. The variable weather, in combination with winds, snow, and seasonal temperature extremes, is the primary limiting factor affecting landscape establishment. The base perimeter has been screened with evergreens and small groves of deciduous trees have been planted in open areas. Both entrances to the Eagle Meadows MFH community have been enhanced with brick pavers, masonry signage, and landscape improvements. The northern Eagle Heights entrance has been landscaped in a similar manner. Decorative masonry walls have been built along Lebanon Road in the Eagle Heights MFH community. Masonry walls, also serving as a security measure, have been constructed along Atlantic Street to screen the industrial uses found along the flight line. The base has also taken steps to screen solid waste dumpsters, swimming pools, and areas where construction activity presents a visual detractor.

3.2 CULTURAL RESOURCES

Cultural resources are defined as any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, or religious reasons. They can be divided into three categories: archaeological; architectural/engineering; and traditional.

Archaeological resources are locations where prehistoric or historic activity measurably altered the earth, or produced deposits of physical remains. Architectural/engineering resources include standing buildings, dams, canals, bridges, and other structures of historic significance. Architectural/engineering resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP). However, more recent structures, such as Cold War era resources, may warrant protection if they manifest "exceptional significance" or the potential to gain significance in the future. Traditional resources are resources associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community.

The ROI for cultural resources is the area within which the Proposed Action has the potential to affect existing or potentially occurring archaeological, architectural, or traditional resources. For the Proposed Action and alternatives, the ROI is defined as Dover AFB.

3.2.1 Identified Cultural Resources

Dover AFB has inventoried all of its buildings and evaluated their significance as part of its responsibilities under Section 110 of the National Historic Preservation Act (NHPA). Building 1301, a World War II hangar facility is listed in the National Register of Historic Places (NRHP); another seven buildings remaining from World War II are not eligible for the NRHP. Building 1303, the former Strategic Air Command (SAC) Alert facility and its associated "Christmas Tree" alert apron, consisting of a seven-stub, herringbone parking ramp, are considered eligible for listing on the NRHP as resources of the Cold War. An additional 23 architectural resources have been identified as dating to the Cold War-era (U.S. Air Force Air Mobility Command [AMC] 2000; U.S. Air Force AMC 1996). Of these, 10 were recommended for reevaluation once they reached 50 years of age; all but one are located in the southeast portion of the base. One resource identified as requiring reevaluation upon reaching 50 years of age, Building 714, is located in what would be Distribution Zone 3 under the Proposed Action. Building 714 was completed in 1956 and is a double-cantilever medium bomber hangar that was built to accommodate three B-47s or two B-36s. Several facilities ancillary to Building 714 but not identified as historic, are also in Central Heat Plant Distribution Zones 1 and 3.

Dover AFB's completion of its compliance with Section 110 of the NHPA, requiring inventory and identification of cultural resources on the base, has included archaeological surveys. Of the eleven archaeological sites identified at Dover AFB (U.S. Air Force AMC 2000), five are considered to be potentially eligible for listing on the NRHP. The Keeper is currently deciding the eligibility of a sixth site. Four areas are considered sensitive for the presence of cultural resources and all are located within the Industrial Areas of the base (U.S. Air Force AMC 2000).

The Central Heat Plant, Building 617, is not considered eligible for the NRHP. It is located in an area that has previously been disturbed and, therefore, has a low potential for subsurface, previously unrecorded cultural resources.

3.3 PHYSICAL RESOURCES

3.3.1 Biological Resources

For purposes of the impact analysis, biological resources are divided into three major categories: (1) terrestrial communities, (2) wetland and freshwater aquatic communities, and (3) threatened, endangered, and special status species/communities. The ROI for biological resources includes Dover AFB and the specific areas associated with the Proposed Action and Alternative One.

TERRESTRIAL COMMUNITIES

Only a relatively small portion of Dover AFB is forested or remains in its natural state. At present, the vast majority of grounds at Dover AFB are intensively maintained, resulting in landscaped property and a predominance of short turf grasses. Approximately 130 acres of

native woodland and wetland remain, with the rest being semi-improved and improved lawns, open fields, and impervious surfaces.

Prior to establishment of the base, much of the forest had been cleared for agriculture, with limited areas of woodland remaining. The remnant woodlands have likely undergone some form of logging. Original stand timber may exist east of the hazardous cargo storage area.

Wildlife on the base are widespread species that are habitat generalists or tolerant of disturbance. This includes a wide variety of game and furbearing species, small mammals, waterfowl, songbirds, raptors, amphibians, reptiles, and fish. The proximity of the base to estuarine and marine habitats of Chesapeake Bay provides habitat for a variety of neotropical migrants and waterfowl.

WETLAND AND FRESHWATER AQUATIC COMMUNITIES

The initial jurisdictional wetland survey was performed in conjunction with an Ecological Risk Assessment Phase I Site Characterization done in 1992. This survey was performed at only three locations on the base—areas within and immediately adjacent to Pipe Elm Branch in the northeastern portion of the base, areas immediately around Environmental Restoration Program (ERP) site LF-13 (rubble fill) east of the airfield, and areas adjacent to the golf course and the St. Jones River. Several additional wetland areas were observed as part of the Delaware Natural Heritage Inventory (DNHI) survey in 1991 and 1992. However, these areas were not delineated, and they were identified mainly as general locations where certain obligate or facultative wetland plants occurred along with other vegetation.

An additional base-wide delineation survey was performed in 1998, which included a background evaluation of soils, vegetation, hydrology, land use history, and an on-site wetland survey using methodology described in the U.S. Army Corp of Engineers (USACE) Wetland Delineation Manual. A total of 74.11 acres of regulated waters were delineated having approximately 39 miles of boundary lines. Wetlands associated with the St. Jones River, and upland terrestrial forested areas of limited extent situated near MFH and the golf course, and on the eastern side of the base. A wetlands delineation conducted in 2004 has been approved by the USACE that identified 72.15 acres of regulated wetlands (personal communication Brenner 2005). A map identifying these wetlands is included in Appendix B.

THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES/COMMUNITIES

There are no known federally listed threatened or endangered species populations on Dover AFB properties according to a 1993 study by the DNHI. The study covered the entire base with a focus on areas of remnant native vegetation. Two S1 (extremely rare in the state) plant species (fog-fruit, hyssop-leaf hedge-nettle, and) are known to occur on the base. There is one S2 (rare) plant species, the yellow passionflower. This species was identified on base after the 1993 DNHI survey at the historic cemetery site. The tickseed sunflower and the tiny-headed goldenrod, also found during the 1993 survey are ranked S-3. One state endangered species,

the upland sandpiper, and five state rare animal species are also known to occur on Dover AFB. These five state rare animal species include: mud sunfish, four-spine stickleback, great blue heron, broad-winged hawk, and short-eared owl.

3.3.2 Water Resources

Water resources include surface and groundwater features located within the base as well as watershed areas affected by existing and potential runoff from the base, including floodplains. The ROI is defined as the base and the immediate vicinity.

Storm water runoff is discharged into Dover AFB's drainage network, which comprises a series of inlets, manholes, pipes, culverts, and ditches. Runoff is transmitted to natural low-lying areas that surround the base. Water leaves the base at several key locations. Base property situated north of both Atlantic Street and Taxiway E drains to the Morgan and Pipe Elm Branches of the Little River. A small area on the east side of the base, in the vicinity of the ammo storage area, drains to the Lewis Ditch. The remainder of the base drains to an unnamed stream that crosses the golf course, ultimately discharging to the St. Jones River. All of these surface streams eventually drain to Delaware Bay.

Dover AFB is divided into nine drainage subbasins based upon topography and the storm water collection system. The Morgan Branch Drainage Area drains 96 acres north into Morgan Branch. Buildings, parking areas, and the northwest-southeast runway cover approximately 25 percent of this drainage area. Nearly 75 percent is frequently maintained grass intermixed with low seral stage vegetation. The Pipe Elm Branch Drainage Area drains about 1,394 acres into Pipe Elm Branch. Approximately 75 percent of this drainage area is impervious. The north-south runway divides this drainage area into two halves.

Drainage on the west side flows east before entering ditches leading to Pipe Elm Branch. East side drainage flows directly into Pipe Elm Branch. About 168 acres drain from the Pipe Elm Branch North Drainage Area. The north-south runway covers 50 percent of this drainage area and the other 50 percent by intermixed grasses. The Lewis Ditch, Sand Ditch, Dickinson Ditch, and Radio Tower Ditch Drainage Areas drain 481 acres with between 50 and 80 percent of these drainage areas being pervious. The St. Jones River and St. Jones River West Drainage Areas receive drainage from 907 acres including base buildings, parking areas, and the golf course.

Approximately 75 percent of the St. Jones River Drainage Area is impervious, while the majority of the western drainage area is covered by residential landscape. Five oil/water separators are connected to the storm water drainage system. Many materials used in industrial areas are potentially exposed to storm water. These areas can also be exposed to leaks and spills during transfer. Major areas at Dover AFB where significant materials are exposed to storm water are the base supply storage area and aerial port, the fuel parking areas, the deicing areas, the bulk fuel storage areas, the aircraft refueling areas, and the fire station.

Eight monitoring points, primarily storm drainage outfalls, have been approved as part of Dover AFB's 2004 National Pollutant Discharge Elimination System (NPDES) storm water permit application. These eight storm water outfalls drain approximately 2,575 acres and are found in various locations throughout the installation. Due to the high amount of impervious surface and aircraft maintenance activities, two of these outfalls (003 and 007) are the most significant from a potential environmental impact standpoint.

Because a majority of the deicing activities at Dover occur within the Outfall 003 drainage area, the NPDES permit requires that this outfall be monitored. Outfall 003 has been equipped with an automated storm water sampler to sample runoff from storm events.

Dover AFB generates 100 percent of its potable water requirements through production wells on the base. Seven wells are permitted by the State of Delaware and in use at Dover AFB. A pretreatment system is under design to address arsenic contamination in drinking water on the base. Since the water supply of the base is drawn from the Cheswold and Piney Point Aquifers, it is critical that groundwater be protected from pollution. Currently, groundwater contamination at Dover AFB is confined to the Columbia Aquifer, which is not used for drinking water.

Floodplain areas on Dover are restricted to areas on the golf course along the unnamed drainage into the St. Jones River. Some additional floodplain is also located immediately along the river where it borders Dover AFB.

3.4 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Occupational Safety and Health Administration (OSHA); and the Emergency Planning and Community Right-to-Know Act (EPCRA). Hazardous materials have been defined in AFI 32-7086, *Hazardous Materials Management*, to include any substance with special characteristics that could harm people, plants, or animals. Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA) as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that could or do pose a substantial hazard to human health or the environment. Waste may be classified as hazardous because of its toxicity, reactivity, ignitibility, or corrosivity. In addition, certain types of waste are "listed" or identified as hazardous in 40 CFR 263.

Hazardous Materials

The majority of hazardous materials used by Air Force and contractor personnel at Dover AFB are controlled through an Air Force pollution prevention process called HAZMART. This process provides centralized management of the procurement, handling, storage, and issuing of hazardous materials and turn-in, recovery, reuse, or recycling of hazardous materials. The HAZMART process includes review and approval by Air Force personnel to ensure users are aware of exposure and safety risks.

Hazardous materials are used throughout Dover AFB. Base supply provides these materials to various users, including Logistics, Operations and Medical Groups, Civil Engineering, Services, and other Air Force and tenant organizations. The “pharmacy” system has been implemented to reduce the amount of hazardous materials stored at work centers, and all users are currently participants. Pharmacy facilities in Building 630 include the main warehouse and corrosives/flammables storage. The pharmacy also controls a separate area in Building 634 for compressed gas cylinder storage.

Hazardous Waste

Hazardous wastes generated at Dover AFB include used antifreeze, contaminated fuels, flammable solvents, waste paint-related materials, and other miscellaneous wastes. These wastes are generated primarily from aircraft operations and maintenance, engineering activities, machine shops, fuel storage areas, fire training, and weapons storage. Some fuels, hazardous materials and hazardous wastes are stored and handled along the flight line in the northwestern area of the base. Responsibility for overseeing hazardous waste management lies with the generating location and 436th Civil Engineering Squadron/Environmental Flight (CES/CEV), which has designated locations as accumulation points and satellite accumulation points. Each organization appoints accumulation point managers and alternate managers to ensure the proper identification, handling, storage, and record keeping for hazardous wastes. The generating activity center is responsible for transporting the waste to the permitted storage facility at Building 1306. Dover AFB has a single storage facility in Building 1306 that stores wastes from the various accumulation points until they are transported off-base for disposal within 90 days of generation.

All transformers at Dover AFB were tested for PCBs in 1989. All transformers identified with PCB contents of 50 parts per million (ppm) or greater were removed. However, analysis of a regulator involved in an electrical substation fire on 30 December 1996 showed a level of 105 ppm of PCBs. A transformer next to the regulator was also found to contain PCB-contaminated fluid. The transformer was removed, and a follow-on survey was completed in 1998. The survey found eight transformers with levels above 50 ppm of PCBs and eight transformers with levels between 40 to 49 ppm. All sixteen transformers were removed and replaced. As PCB-containing capacitors and ballasts are removed, they are transported to a storage location in Building 1306 until transported off base for disposal.

Storage Tanks

The Central Heat Plant uses natural gas as the primary fuel, and the fuel oil serves as an alternate fuel when the natural gas flow is interrupted. The three 25,000 gallon day tanks and the two 150,000-gallon bulk petroleum, oil, and lubricant (POL) storage tanks (see Figure 3.4-1) associated with the Central Heat Plant are surrounded by containment dikes. The containment berms are constructed of sloped earth covered with asphaltic concrete. The basins of the diked areas are lined with crushed stone. All of the tanks and underground lines have cathodic protection systems (Air Force 2001a).



Figure 3.4-1. Aboveground Storage Tanks at Central Heat Plant

The 1996 Management Action Plan for the ERP reports 359 existing underground storage tanks (USTs) at Dover AFB. These include 323 USTs used for storage of small (less than 1,100 gallons) and large (greater than 1,100 gallons) volumes of heating fuel; 33 USTs associated with the hydrant system; and three Service Station USTs. Over 70 USTs have been removed in the last few years. Leak detection tests are performed annually, and inventory control measurements are taken for existing USTs.

Environmental Restoration Program

The Department of Defense (DoD) developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites that existed on DoD property prior to 1984.

Dover AFB was placed on the National Priority List (NPL) in March 1989. A Federal Facilities Agreement (FFA) was signed in August 1989 to address the environmental cleanup of hazardous substances, pollutants, or contaminants present at Dover AFB. The FFA is pursuant to CERCLA, RCRA, EO 12580, Defense Environmental Restoration Program (DERP), National Contingency Plan (NCP), and applicable State of Delaware Statutes.

Site inspections conducted in the early 1990s identified, 59 ERP sites at Dover AFB. The principal site types are USTs, oil-water separators, and industrial waste collection drains, fire training areas, landfills, fuel spills, fuel leaks, and a fuel hydrant system. Fifty-two of the ERP sites are governed by CERCLA regulations, six sites fall under the State UST Program, and one site is governed by RCRA Subtitle C.

A base-wide remedial investigation conducted in the mid-1990s was approved by the U.S. Environmental Protection Agency (USEPA) in 1997. As a result of the remedial investigation, 23 of the 59 sites were shown to require no cleanup action and were categorized as “no further action” sites. The remaining 36 sites were carried forward for further evaluation and cleanup. There are no active ERP sites are within the project area.

Solid Waste Management

Solid waste generated on Dover AFB is removed by private contractor to the Central Delaware Solid Waste Authority (DSWA) Landfill on Route 10 in Sandtown, Delaware. The Base landfills about 4 tons per day. The landfill accepts municipal and residential solid waste and construction and demolition debris. The landfill accepts on an average day 395 tons and has approximately 15 years of life remaining based on current disposal rates. Recycling receptacles owned and maintained by the DSWA are located at one central site on base. DSWA removes the recyclables from base to their off base recycling center.

3.5 NOISE

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human response to noise varies according to the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day. The ROI for noise includes the area surrounding the project location.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (often denoted dBA) are used to characterize sound levels that are heard especially well by the human ear. All sound levels analyzed in this EA are A-weighted; thus, the term dB implies dBA unless otherwise noted.

At Dover AFB, noise contributions from aircraft operations and ground engine run-ups at the airfield have been calculated using the NOISEMAP model, the standard noise estimation methodology used for military airfields. NOISEMAP uses the following data to develop noise contours: aircraft types, runway utilization patterns, engine power settings, airspeeds, altitude profiles, flight track locations, number of operations per flight track, engine run-ups, and time of day. The Air Installation Compatible Use Zone (AICUZ) indicates that the Central Heat Plant and areas affected by this proposal would be within the area primarily defined by the 70-80 Day-Night Average Sound Level (DNL) noise contours (Air Force 2000).

3.6 AIR QUALITY

Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards.

Federal Air Quality Standards. Under the authority of the CAA, the USEPA has established nationwide air quality standards, known as the National Ambient Air Quality Standards (NAAQS), for six “criteria” pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), respirable particulate matter less than or equal to 10 micrometers in diameter (PM₁₀), sulfur dioxide (SO₂), and lead (Pb), to protect public health and welfare (USEPA 2004a). The Federal standards represent the maximum allowable atmospheric concentrations for these six pollutants (see Table 3.6-1). The NAAQS are defined in terms of concentration (e.g., ppm or micrograms per cubic meter [µg/m³]) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Nonattainment regions, upon achieving attainment, are considered to be in maintenance status for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis for an attainment designation. For the purpose of applying air quality regulations, unclassifiable areas are treated similar to areas that are in attainment of the NAAQS.

State Air Quality Standards. Under the CAA, state and local agencies may establish ambient air quality standards (AAQS) and regulations of their own, provided that these standards are at least as stringent as the federal requirements. The DNREC regulates air quality in the State of Delaware and has established its own state standards under Regulation 3 (DNREC 1999a). A summary of the NAAQS and Delaware AAQS that apply to the proposed project area is presented in Table 3.6-1.

State Implementation Plan. For non-attainment regions, the states are required to develop a State Implementation Plan (SIP) designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state.

Table 3.6-1. National Ambient Air Quality Standards

Air Pollutant	Averaging Time	NAAQS		DELAWARE AAQS	
		Primary	Secondary	Primary	Secondary
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm 35 ppm	— —	9 ppm 35 ppm	— —
Nitrogen Dioxide (NO ₂)	AAM	0.053 ppm	0.053 ppm	0.05 ppm	—
Sulfur Dioxide (SO ₂)	AAM 24-hour 3-hour	0.030 ppm 0.14 ppm —	— — 0.50 ppm	0.03 ppm 0.14 ppm —	— — 0.50 ppm
Particulate Matter (PM ₁₀)	AAM 24-hr	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³
Particulate Matter (PM _{2.5}) ^(a)	AAM 24-hour	15 µg/m ³ 65 µg/m ³	15 µg/m ³ 65 µg/m ³	15 µg/m ³ 65 µg/m ³	15 µg/m ³ 65 µg/m ³
Total Suspended Particulates (TSP)	AGM 24-hour	— —	— —	75 µg/m ³ 260 µg/m ³	60 µg/m ³ 150 µg/m ³
Ozone (O ₃) ^(b)	1-hour 8-hour	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm
Lead (Pb) and Lead Compounds	3-month	1.5 µg/m ³	1.5 µg/m ³	1.5 µg/m ³	—
Hydrocarbons (HC)	3-hour	—	—	0.24 ppm	—
Hydrogen Sulfide (H ₂ S)	3 minutes 60 minutes	— —	— —	0.06 ppm 0.03 ppm	— —

Notes: AAM = Annual Arithmetic Mean; AGM = Annual Geometric Mean; ppm = parts per million; µg/m³ = micrograms per cubic meter.

(a) The PM_{2.5} standard (particulate matter with a 2.5 µm diameter or smaller) will be implemented over the next few years. USEPA finalized area designation of the PM_{2.5} standard in December 2004.

(b) The 8-hour O₃ standard will replace the 1-hour standard in June 2005, one year after the effective date of EPA's recent nonattainment designations. Meanwhile, the 1-hour O₃ standard will continue to apply to areas that currently do not attain it.

Sources: 40 Code of Federal Regulations 50; Delaware Regulation 3.

Prevention of Significant Deterioration (PSD). Section 162 of the CAA further established the goal of PSD of air quality in all international parks; national parks which exceeded 6,000 acres; and national wilderness areas and memorial parks which exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states or tribal nations, in addition to the federal government, have the authority to redesignate certain areas as (non-mandatory) PSD Class I areas, e.g., a national park or national wilderness area established after August 7, 1977, which exceeds 10,000 acres. PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are

those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction permitting system. The closest PSD Class I area to the project area is the Brigantine Wild Area, New Jersey, which approximately 70 miles from Dover AFB.

Visibility. CAA Section 169A established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM₁₀ and SO₂ in the lower atmosphere.

General Conformity. CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

- (a) cause or contribute to any new violation;
- (b) increase the frequency or severity of any existing violation; or
- (c) delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases. For the newly adopted 8-hour O₃ and the PM_{2.5} standards, according to USEPA Guidance (USEPA 2004d), conformity and other planning requirements are triggered one year after the final USEPA designations.

3.6.2 Existing Conditions

Dover AFB is located in Kent County, Delaware, within the Southern Delaware Intrastate Air Quality Control Region (AQCR) #046, which includes the counties of Kent and Sussex. This area includes substantial industry, several military and commercial airfields, and a large population that generate emissions.

Air quality in Kent and Sussex counties is currently designated as in attainment of the NAAQS for all criteria pollutants except O₃. For O₃ and its precursor pollutants (volatile organic compounds [VOCs] and nitrogen oxides [NO_x]) the affected area is considered "severe" nonattainment for USEPA's 1-hour standard and "moderate" nonattainment for the 8-hour standard (USEPA 2004d). The area is required to reach attainment of the 1-hour O₃ standard by June 15, 2010. For areas which are in attainment of the 1-hour O₃ standard, the USEPA will revoke the 1-hour O₃ standard in June 2005 (USEPA 2004e). This will not apply to Kent County since it is in nonattainment of the 1-hour O₃ standard. In December 2004, the USEPA issued final designations for PM_{2.5} and Kent County was designated as in attainment of this new standard (USEPA 2004f).

Table 3.6-2 summarizes the baseline emissions of criteria pollutants and precursor emissions for State of Delaware and for Dover AFB. Baseline emissions for Dover AFB are incorporated into these totals for the AQCR. For each criteria pollutant, Dover AFB contributes less than 1 percent of the regional emissions. The base has been issued a Title V operating permit by the DNREC.

Table 3.6-2. Baseline Emissions for Dover AFB and Affected Environment

<i>Emissions</i>	POLLUTANTS (TONS PER YEAR)				
	<i>CO</i>	<i>VOCs</i>	<i>NO_x</i>	<i>SO₂</i>	<i>PM₁₀</i>
Delaware Emissions Inventory ¹	20,653	6,104	20,529	77,044	3,741
Dover AFB – Stationary Sources ²	28.5	34.2	65.9	29.4	4.8
Dover AFB – Central Heat Plant ²	11.4	1.0	25.2	22.3	2.7
Central Heat Plant As % of AFB Total	40.0%	2.9 %	38.2 %	75.9 %	56.2%
<i>Sources:</i> 1. USEPA AirData, 1999 Data; 2. 2004 Dover AFB Emissions Inventory, Air Force 2005					

The Proposed Action would replace the four dual fuel fired (natural gas and oil) boilers currently located at the Central Heat Plant with a number of smaller boilers to be installed within the cantonment area currently being serviced by the Central Heat Plant. Baseline emissions for the existing boilers at the Central Heat Plant and the percentage contribution to the overall facility-wide emissions are shown in Table 3.6-2.

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4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4.0 presents the environmental consequences of the Proposed Action and the alternatives at Dover AFB for each of the resource areas discussed in Chapter 3.0. To define the consequences, this chapter evaluates the project elements described in Chapter 2.0 against the affected environment provided in Chapter 3.0. Cumulative effects of the Proposed Action with other foreseeable future actions are presented in Chapter 5.0.

4.1 LAND USE

4.1.1 Proposed Action

Land Use

With the implementation of the Proposed Action, the Central Heat Plant and its supporting facilities would be demolished. The area is currently identified in the Base General Plan for industrial uses. Once the site was cleared it would be available as a development opportunity for the base. Installation of the boilers and natural gas pipelines would not have any adverse environmental consequences to this resource.

Transportation

Under the Proposed Action, the proposed demolition of Central Heat Plant and construction of new natural gas boilers and pipelines may require temporary lane or street closures for a few weeks. The contractor would provide signage and alternate route detours to maintain access to the areas impacted for base personnel. Truck traffic associated with the construction would be directed through the North Gate. Although truck traffic may lead to some degradation of these road surfaces and occasional congestion at the North Gate, these adverse effects would be short-term and not significant.

VISUAL RESOURCES

With the implementation of the Proposed Action, the existing Central Heat Plant and the existing ASTs and associated appurtenances would be demolished. There would be an overall improvement to the visual resources within the project area since the existing industrial facilities would no longer exist.

4.1.2 Alternative One

LAND USE

Under Alternative One, impacts would be similar to those identified under the Proposed Action. No adverse impacts to land use are anticipated.

TRANSPORTATION

With the implementation of this alternative, impact to the transportation system at Dover AFB would almost be identical to those identified for the Proposed Action. These adverse effects would be short-term lasting the duration of the Central Heat Plant demolition and not significant.

VISUAL RESOURCES

Under Alternative One, impacts to visual resources at Dover AFB would be identical to those identified for the Proposed Action. There would be an overall improvement to the visual resources within this portion of the base since the existing industrial facilities would no longer exist.

4.1.3 No Action Alternative

Under the No Action alternative, Building 617, the Central Heat Plant, would continue to operate and not be demolished and land would not become available for redevelopment. No impacts would occur to the transportation system. The presence of the large Central Heat Plant detracts from the overall architectural compatibility of the rest of base structures.

4.2 CULTURAL RESOURCES

A number of federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Under federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have significance for Native American or other cultural groups.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts are assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources that could be affected. Indirect impacts result primarily from the effects of project-induced population increases.

4.2.1 Proposed Action

Under the Proposed Action, adverse impacts to historic architectural resources could occur if the installation of natural gas-fired heating affected the historic characteristics of a resource. Only one building, Building 714, has the potential to be eligible for listing on the NRHP. Conversion of this hangar's heat source from central distribution to a self-contained natural gas furnace would not affect the NRHP eligibility of the building. Building 617, the Central Heat Plant slated for demolition, is not eligible for the NRHP.

Impacts to archaeological resources are not expected under the Proposed Action. Building 617 and the aboveground storage tanks proposed for demolition are located in a disturbed area with low potential for the presence of archaeological sites (Dover AFB 2001). Construction of the natural gas lines is also not expected to impact archaeological deposits because of the disturbed nature of this portion of Dover AFB. In the event of unanticipated discoveries of archaeological resources, work would halt in the area, and the resources would be managed in compliance with Section 106 of the NHPA and Air Force Instruction (AFI) 32-7065 Cultural Resources Management.

No impacts to traditional resources are likely under the Proposed Action. No traditional resources have been identified within the project area. There are no federally recognized Indian lands or resources at Dover AFB, and no issues have been identified by federally recognized or other Indian groups in Delaware.

4.2.2 Alternative One

Under Alternative One impacts to architectural resource would be the same as the Proposed Action. No impacts to archaeological or traditional resources would be expected under this alternative.

4.2.3 No Action Alternative

Under the No Action alternative, Building 617 would continue to operate and not be demolished, no natural gas distribution lines would be installed, and no buildings would be modified by the installation of natural gas heating. No impacts to archaeological or traditional resources would be expected. Resources would continue to be managed in compliance with federal law and AFI 32-7065.

Delaware "Regulations Governing Aboveground Storage Tanks." Additionally, the Air Force is required to file an "Above Ground Storage Tank Activity Notification" form with the Delaware DNREC.

ENVIRONMENTAL RESTORATION PROGRAM

Demolition of the Central Heat Plant is not anticipated to affect any active ERP sites at Dover AFB. There is the potential that with the removal of the building footings and the associated ASTs that contamination from past practices may be encountered. Any soil suspected of contamination, as discovered during demolition, would be tested and disposed of in accordance with proper DNREC regulations. While the location of new natural gas pipelines installed to service new boilers has not been determined, it is not anticipated that the installation of the pipelines would affect ERP sites.

SOLID WASTE

Demolition of the Central Heat Plant would generate an estimated 1,600 cubic yards of recyclable metal, cinder block and concrete. These materials would be recycled to the greatest extent practicable. There would be a portion of the materials that would be disposed of at the DSWA construction and debris landfill in Sandtown, DE. At the present time, this landfill is accepting 395 tons per day and the additional debris from the demolition of the Central Heat Plant, that is not recycled, would not have an adverse effect on the operating capacity of the landfill.

4.4.2 Alternative One

Under this alternative, environmental consequences to this resource would be very similar to those identified under the Proposed Action. No significant environmental consequences associated with this alternative are expected since accepted waste management handling and disposal practices would be required during the implementation of the action.

4.4.3 No Action Alternative

Under the No Action alternative, demolition of the Central Heat Plant and conversion to natural gas boilers would not occur. No adverse environmental consequences are expected.

4.5 NOISE

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a proposal. Potential changes in the noise environment can be (1) beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels); (2) negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged); or (3) adverse (i.e., if they result in increased exposure to unacceptable levels).

4.5.1 Proposed Action

Implementation of the Proposed Action would have minor, temporary increases in localized noise levels in the vicinity of the project area during construction. The base is an active military facility that typically experiences high noise levels from daily flight operations. Use of heavy equipment for site demolition of the Central Heat Plant (i.e., grading, fill, demolition) would generate noise. However, noise would be similar to typical construction noise, last only the duration of the specific construction activities, and could be reduced by the use of equipment sound mufflers and restricting construction activity to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). Table 4.5-1 shows sound levels associated with typical heavy construction equipment under varying modes of operation.

Table 4.5-1. Typical Equipment Sound Levels

<i>Equipment</i>	SOUND LEVEL (IN DBA) UNDER INDICATED OPERATIONAL MODE ¹		
	<i>Idle Power</i>	<i>Full Power</i>	<i>Moving Under Load</i>
Forklift	63	69	91
Backhoe	62	71	77
Dozer	63	74	81
Front-End Loader	60	62	68
Dump Truck	70	71	74
<i>Note:</i> 1. Measured at 125 feet. <i>Source:</i> Air Force 1998c.			

The only potentially sensitive receptor is Building 600 (Civil Engineering), located approximately one block east of Building 617; however, the limited duration of the demolition should limit any potential disturbance to these offices. Compared with aircraft noise, noise produced by construction would be relatively lower in magnitude, and spread out during the business day. Noise from truck traffic hauling construction and demolition materials to and from the site would not affect base residents because the North Gate would provide construction access and the majority of the full-time residents are located approximately 3 miles off base in Eagle Meadows. The noise disruptions to the base population would be temporary; therefore, impacts are considered insignificant.

4.5.2 Alternative One

Under this alternative, the proposed demolition of Central Heat Plant would occur and 69 new boilers would be installed. Noise levels associated with this alternative would increase temporarily during demolition but would be reduced once complete due to the removal of noise associated with the operation of the Central Heat Plant.

4.5.3 No Action Alternative

Under the No Action alternative, demolition of the Central Heat Plant and installation of new boilers would not occur. Noise levels would remain the same as they are currently.

4.6 AIR QUALITY

Air emissions resulting from the Proposed Action were evaluated in accordance with federal and state air pollution standards, rules, and regulations. Air quality impacts from a proposed activity or action would be significant if they:

- increase ambient air pollution concentrations above any NAAQS;
- contribute to an existing violation of any NAAQS;
- interfere with or delay timely attainment of NAAQS; or
- impair visibility within any federally mandated federal Class I area.

According to USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is only required if the Proposed Action impacts a non-attainment area. Dover AFB is located in Kent County, which is classified by the USEPA as severe nonattainment for the 1-hour O₃ standard and moderate nonattainment for the 8-hour O₃ standard. Thus, a conformity determination must be performed if the project emissions exceed the *de minimis* thresholds of 25 tons per year of NO_x or VOCs (*these are precursors to O₃*).

As described in section 3.6.1, the CAA established designated PSD Class I areas, where appreciable deterioration in air quality is considered significant. The nearest PSD Class I area to the project area is approximately 70 miles northeast of Dover AFB. Therefore, the Proposed Action would be unlikely to have a significant impact visibility on any PSD Class I areas.

The approach to the air quality analysis was to estimate the changes in emission levels due to the Proposed Action.

4.6.1 Proposed Action

The Proposed Action would involve the demolition of the Central Heat Plant building and the addition of natural gas-fired or dual fuel (natural gas and fuel oil) fired boilers at approximately 85 buildings currently serviced by the Central Heat Plant. Other construction activities associated with the Proposed Action include the installation of a new natural gas distribution piping system to supply the fuel for the smaller boilers that will be installed at the 85 affected buildings currently being serviced by the Central Heat Plant.

Demolition and Construction Emissions. These temporary activities are expected to result mainly in fugitive dust (PM₁₀) emissions and smaller amounts of CO, VOCs, NO_x, PM₁₀, and

sulfur oxides (SO_x) emissions which are generated from diesel combustion during the use of heavy-duty construction equipment. Demolition activities are expected to take approximately 3 months, with the Main Building taking approximately 2 months, due to its large area. Emissions from demolition and construction activities were quantified using the Air Force Conformity Applicability Model (ACAM, Version 4.0.3) software (Air Force 2005). The dimensions (width, length, and height) for various parts of the Central Heat Plant building were identified based on the “as built” and property card records.

Emissions from the pipeline construction activities were estimated assuming that the equivalent of a 4-acre area is being trenched and graded to lay the pipeline system needed to supply natural gas to the various buildings listed in Table 2-1, where the new “smaller” boilers will be installed. Emissions from pipeline construction activities were quantified using the Air Force Conformity Applicability Model (ACAM, Version 4.0.3) software (Air Force 2005). Model input and output printouts are presented in Appendix A.

Table 4.6-1 summarizes the worst-case scenario emission estimates for the Central Heat Plant demolition activities and the pipeline construction activities.

Table 4.6-1. Construction Emissions (Year 2006) – Proposed Action

<i>Source</i>	EMISSIONS (IN TONS)				
	<i>CO</i>	<i>VOC</i>	<i>NO_x</i>	<i>SO_x</i>	<i>PM₁₀</i>
Demolition	—	—	—	—	1.31
Pipeline Construction (uncontrolled)	0.07	0.25	0.03	0.03	7.30
Total	0.07	0.25	0.03	0.03	8.61

Emissions from construction projects are temporary in nature and would end when the construction is complete. The emissions from fugitive dust (PM₁₀) would be considerably less than those presented in Table 4.6-1 due to the implementation of control measures in accordance with standard construction practices. For instance, frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during construction. Using efficient practices and avoiding long periods where engines are running at idle can also reduce combustion emissions from construction equipment. Vehicular combustion emissions from construction worker commuting may be reduced by carpooling.

In general, combustive and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality in Kent County or AQCR #046.

Operational Emissions. Air emissions at the Base, after the Proposed Action is completed, are not expected to change significantly from current emissions, as there is no change in energy demand, but rather a change in the location where the heat is generated. Potentially the new heating equipment may be more efficient and could result in lower air pollutant emissions than the Central Heat Plant that would be removed. The installation or modification of any air emission sources, such as the Central Heat Plant boilers, may trigger permitting requirements with DNREC, the State agency. Two potential operational scenarios were analyzed to provide a range of the potential air quality impacts from the project since the emissions are dependent on the type of burner used and the type and quantity of fuel burned. The future projected fuel usage for the new boilers is assumed to be equivalent to that used by the four Central Heat Plant boilers in 2004 which is estimated at 237.5 million British Thermal Units (Btu) per year.

Table 4.6-2 presents the estimated emissions from the new boilers and the projected changes in emissions from the project assuming low NO_x burners and only natural gas are used in the new boilers (operational scenario 1). This potential operational scenario would result in a positive environmental impact as it leads to a net reduction in the emissions of NO_x; an ozone precursor, CO, SO_x, and PM₁₀, and a small increase in VOC emissions; an ozone precursor.

Table 4.6-2. Projected Emissions from the Proposed Action - Low NO_x Option (Year 2007)

Source	EMISSIONS (IN TONS/YEAR)				
	CO	VOC	NO _x	SO _x	PM ₁₀
New Boilers	9.7	1.3	5.8	0.1	0.9
Removal of Old Boilers ¹	(11.4)	(1.0)	(25.2)	(22.3)	(2.7)
Net Change	(1.7)	0.3	(19.4)	(22.2)	(1.8)
Note: 1. 2004 Dover AFB Emissions Inventory, Air Force 2005					

Table 4.6-3 presents the estimated emissions from the new boilers and the projected changes in facility emissions from the project assuming low NO_x burners are not used in the new boilers (operational scenario 2). Also, it is assumed that fuel oil is used in some boilers (10% of total heat input). This potential operational scenario would also result in a positive environmental impact including a net reduction in all pollutant emissions except VOCs (*although the reductions for NO_x and SO_x would be less than operational scenario 1, described above*).

Table 4.6-3. Projected Emissions from the Proposed Action - No Low NO_x Option (Year 2007)

Source	EMISSIONS (IN TONS/YEAR)				
	CO	VOC	NO _x	SO _x	PM ₁₀
New Boilers	9.1	1.2	14.7	6.4	1.6
Removal of Old Boilers ¹	(11.4)	(1.0)	(25.2)	(22.3)	(2.7)
Net Change	(2.3)	0.2	(10.5)	(15.9)	(1.1)
Note: 1. 2004 Dover AFB Emissions Inventory, Air Force 2005					

Table 4.6-4 summarizes the conformity applicability screening determination produced by the ACAM Model for operational scenario 2. The total emissions from the project (not taking into consideration the net emission reductions from shutdown of the four boilers at the Central Heat Plant) are well below the conformity threshold of 25 tons per year of NO_x or VOCs and the NO_x and VOC emissions will be *de minimis* for both of the potential operational scenarios described above. Therefore, a conformity determination is not required for this Proposed Action. Detailed information related to the air quality calculations and analysis is presented in Appendix C.

Table 4.6-4. Conformity Applicability Determination for the Proposed Action

Year	EMISSIONS ¹ (IN TON/YEAR)				
	CO	VOC	NO _x	SO _x	PM ₁₀
2006	7	1	9	0	9
2007	10	1	12	0	1
De Minimis Threshold	NA	25	25	NA	NA
10% of County Budget	NA	1,013.8	1,174.2	NA	NA
Note: 1. ACAM 4.0.3 Model, Air Force 2005.					

The temporary construction-related emissions are not expected to adversely impact air quality in the region or visibility in any of the PSD Class I areas in the vicinity of the base. The operational emissions could result in a net benefit to the environment (including a reduction in hazardous air pollutant emissions) if there is a reduction in the use of fuel oil.

Permitting Considerations. A preliminary review of applicable DNREC regulations was conducted to assess permitting requirements associated with the project. The facility currently holds a Title V permit. A modification to the Title V permit would be needed to remove the Central Heat Plant boilers from the permit.

The facility would probably use a combination of natural gas-fired boilers and dual (natural gas and oil) fuel-fired boilers as the replacement boilers installed at the various buildings. The new boilers that would result from the Proposed Action would be expected to be exempted from permitting based on projected heat input of these boilers. However, a final permitting applicability determination and an evaluation of the need to implement Best Available Control Technology (BACT) should be made based on final equipment design and selection, and in case the Base decides to use boilers which are larger in size than the exempted heat rating thresholds identified by DNREC. According to DNREC Regulation 2, Section 2.2 (c), natural gas fired boilers with a rated heat input less than 15 million Btu per hour and dual (natural gas and oil) fuel fired boilers with a rated heat input less than 10 million Btu per hour are exempt from permitting requirements. Moreover, DNREC Regulation 25 requires the implementation of BACT for a major modification. In certain instances, some state agencies have considered the addition of multiple units as part a project as one "single" emission source so that a facility is

not able to bypass applicable regulations by breaking a large project into “smaller” parts, thereby eliminating the need to install emission controls or to provide emission offsets.

Moreover, since the project involves the shut down of “larger” size boilers and implementation of the project may result in a net reduction in pollutant emissions, there may be an opportunity to bank the emission reductions assuming that they are surplus and real; so that they can be used as offsets in future projects at the Base. Thus, a review of the proposed project with DNREC to confirm the exemption status of the new boilers and the necessary modifications for the Title V permit is needed.

4.6.2 Alternative One

Under this alternative, environmental consequences to this resource would be very similar to those identified under the Proposed Action. With the proposed demolition of Central Heat Plant and the installation of 69 new boilers and associated natural gas pipeline, operational emissions would be slightly less than those identified in Tables 4.6-2 and 4.6-3 for the Proposed Action.

4.6.3 No Action Alternative

Under the No Action alternative, no construction emissions would occur and operational emissions would be identical to current baseline emission levels presented in Chapter 3.0.

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

This section provides (1) a definition of cumulative effects, (2) a description of past, present, and reasonably foreseeable actions relevant to cumulative effects, (3) an evaluation of cumulative effects potentially resulting from these interactions and (4) the irreversible and irretrievable commitment of resources.

5.1.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Recent CEQ guidance in *Considering Cumulative Effects* affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographic and temporal overlaps among the Proposed Action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with, or in close proximity to, the Proposed Action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

To identify cumulative effects, this EA addresses three questions:

1. Does a relationship exist such that elements of the Proposed Action might interact with elements of past, present, or reasonably foreseeable actions?
2. If one or more of the elements of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

In this EA, an effort has been made to identify all actions that are being considered and that are in the planning phase at this time. To the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action in this EA, these actions are included in this cumulative analysis. This approach enables decision makers to have the most current information available so that they can evaluate the environmental consequences of the Proposed Action.

5.1.2 Past, Present, and Reasonably Foreseeable Actions

This EA applies a stepped approach to provide decision makers with not only the cumulative effects of the Proposed Action, but also the incremental contribution of past, present, and reasonably foreseeable actions.

PAST AND PRESENT ACTIONS RELEVANT TO THE PROPOSED ACTION

Dover AFB is an active military installation that undergoes continuous change in mission and in training requirements. This process of change is consistent with the U.S. defense policy that the Air Force must be ready to respond to threats to American interests throughout the world. The base, like any other major institution, also requires occasional new construction, facility improvements, and infrastructure upgrades.

REASONABLY FORESEEABLE FUTURE ACTIONS

During the timeframe FY 05 to FY 08, Dover AFB has proposed a number of actions that are independent of the Proposed Action and would be implemented irrespective of a decision on the proposed Demolition of Central Heat Plant. Construction programs include new or additions to the aerial port, youth center, transient lodging, fitness center and child development center. Dover AFB also anticipates demolishing 12 additional structures in FY 05 totaling approximately 500,000 square feet. In addition to these ongoing infrastructure improvements, Dover AFB is planning to replace 16 of the existing C-5 aircraft with 12 C-17 aircraft. Sixteen C-5 aircraft would remain at Dover AFB. Seven major construction projects including approximately 94,500 square feet are planned. Construction activities would start in FY 06 and continue through FY 08. Also included in the program would be the demolition of 33,500 square feet of existing structures. The majority of the proposed projects associated with the C-17 beddown at Dover AFB would be constructed along the flightline. This action is currently being evaluated in a separate environmental assessment.

5.1.3 Analysis of Cumulative Impacts

The following analysis examines how the impacts of these other actions might be affected by those resulting from the Proposed Action at Dover AFB and whether such a relationship would result in potentially significant impacts not identified when the Proposed Action is considered alone.

Each of the individual construction and demolition projects would have short-term environmental consequences to air quality and water resources from the generation of fugitive dust and soil erosion. These emissions would be limited with the application of standard construction practices. None of the future infrastructure actions (analyzed in separate environmental documents) would be expected to result in more than negligible impacts either individually or cumulatively. All actions affect very specific, circumscribed areas, and the magnitude of the actions is minimal. Given that the Proposed Action would potentially have a beneficial effect on air quality within the base, the combined impacts of these actions would remain well below the threshold of significance for any resource category.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of “. . . any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented.” Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the demolition of a historic building).

For the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most environmental consequences are short term and temporary (such as air emissions from construction) or longer lasting but negligible (e.g., consumption of landfill space). Those limited resources that may involve a possible irreversible or irretrievable commitment under the Proposed Action are discussed below.

Demolition of Central Heat Plant and installation of the individual boilers would require consumption of limited amounts of materials typically associated with demolition, interior and exterior construction (e.g., concrete, wiring, insulation, and windows). The amount of these materials used is not expected to significantly decrease the availability of the resources.

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7.0 LIST OF PREPARERS

David M. Dischner, Environmental Assessment Manager

B.A., Urban Affairs, Virginia Polytechnic Institute and State University, Blacksburg, 1974

Hazardous Materials Management Certificate, University of California, Riverside, 1988

Years of Experience: 26

Howard B. Rock, Senior Analyst

B.A. Virginia Wesleyan College, Norfolk, VA 1974

Cultural Resources Management Certificate, University of Nevada, Reno 1990

Years of Experience: 31

Adam M. Hasen, Air Quality Program Manager, SAIC

M.B.A., Management and International Business, San Diego State University, 1991

M.S., Chemical Engineering, University of Connecticut, 1982

B.S., Chemical Engineering, University of Arizona, 1980

Years of Experience: 23 (Other Firms – 9)

Lorraine S. Gross, Senior Archeologist

M.A., Anthropology, Washington State University, Pullman, WA, 1986

B.A., Anthropology, Pomona College, Claremont, CA, 1975

Years of Experience: 23

Forrest C. Smith, Publications Manager, SAIC

B.A., History and Political Science, University of California, Santa Barbara, 1970

Years of Experience: 30 (Other Firms – 14)

Kathy Kramer, Publications Specialist

M.A., Dramatic Art, University of California, Santa Barbara, 1985

B.A., Dramatic Art, University of California, Santa Barbara, 1976

Years of Experience: 20

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APPENDIX A
AIR QUALITY CALCULATIONS

Building Demolition Information

Demolition Description

Main Building

Maximum of 20 characters

Duration of Demolition: days

Building Width: feet

Building Length: feet

Building Height: feet

Start Date of Demolition:

Year:

Quarter:

OK

Cancel

Building Demolition Information

Demolition Description

Offset 1

Maximum of 20 characters

Duration of Demolition: 5 days

Building Width: 38 feet

Building Length: 16 feet

Building Height: 24 feet

Start Date of Demolition:

Year: 2006

Quarter: 2

OK

Cancel

Building Demolition Information

Demolition Description

Offset 2

Maximum of 20 characters

Duration of Demolition: 20 days

Building Width: 87 feet

Building Length: 75 feet

Building Height: 24 feet

Start Date of Demolition:

Year: 2006

Quarter: 2

OK

Cancel

Building Demolition Information

Demolition Description

Wing

Maximum of 20 characters

Duration of Demolition: 10 days

Building Width: 45 feet

Building Length: 24 feet

Building Height: 65 feet

Start Date of Demolition:

Year: 2006

Quarter: 2

OK

Cancel

Building Demolition Information

Demolition Description

Basement

Maximum of 20 characters

Duration of Demolition: days

Building Width: feet

Building Length: feet

Building Height: feet

Start Date of Demolition:

Year:

Quarter:

OK

Cancel

Construction Information

Construction Description

Natural Gas Pipeline

Maximum of 20 characters

No Multi-Family Units:

No Single-Family Units:

Sq Ft Commercial/Retail Units:

sq. feet

Sq Ft Office/Employment Units:

sq. feet

Start Date of Construction:

Year:

Quarter:

Phase 1 Information:

Duration of Phase 1:

days

Gross Area to be Graded:

acres

Are Any of the Following Dust Controls in Place?

Soil Piles

- ☐ Covered Or Watered Twice Daily
- ☐ Automatic Sprinkler System Installed
- ☒ No Controls

Exposed Surface/Grading

- ☐ Watered Twice Daily
- ☐ Watered with Frequency, Keeping Soil Moist at All Times
- ☒ No Controls

Loads

- ☐ At Least 2 Feet of Freeboard
- ☐ Secure Cover
- ☒ No Controls

Truck Hauling Road

- ☐ Unpaved and Watered Twice Daily
- ☐ Paved
- ☒ No Controls

Phase 2 Information:

Duration of Phase 2:

days

Total Acres Paved with Asphalt:

acres

OK

Cancel

Low NOx Burners Operational Scenario

Boiler/Heater Criteria Factors

Select Category	
	8
Type	Industrial/Commercial (0.3 to 100 MMBtu/hr)
Firing Configuration	NA
Fuel Type	Natural Gas
SCC	10200602
Control Type	Low NOx
Units	10 ⁶ ft ³ /yr
<div>OK</div> <div>Cancel</div>	

Emission Factors (lb/10 ⁶ ft ³)	
SO ₂	0.6
NO _x	50
CO	34
VOC	5.5
PM ₁₀	7.6

Boiler Information

Installation	DOVER AFB	
Category	8	<div>Check/Change Category</div>
Boiler Number	Various boilers	
Fuel Type	Natural Gas	
Yearly Throughput	231	
Throughput Units	10 ⁶ ft ³ /yr	
<div>Boiler Period Begins:</div> <div>Year: 2006</div> <div>Quarter: 4</div>		
<div>OK</div> <div>Cancel</div>		

Low NOx Burners Operational Scenario

Conformity Screening Assessment

Conformity Code: GREEN (Conformity determination is not required based on applicability screening.)

DOVER AFB

Tons/Year Emissions For 2006

	CO	NOx	VOC	SO2	PM10
Proposed Action Emissions:	7	5	1	0	9
De Minimis Thresholds:	N/A	25	25	N/A	N/A
Ten Percent of County Budget:	N/A	1174	1014	N/A	N/A
DOVER AFB Emissions:	151	841	141	618	91

Previous Year

Next Year

Exit

County Emissions Inventory Year is 2002
 Installation Emissions Inventory Year is 1996
 County Attainment Status Year is 2002
 Ozone Transport Region: YES
 PSD Class I Area: NO

Conformity Screening Assessment

Conformity Code: GREEN (Conformity determination is not required based on applicability screening.)

DOVER AFB

Tons/Year Emissions For 2007

	CO	NOx	VOC	SO2	PM10
Proposed Action Emissions:	10	6	1	0	1
De Minimis Thresholds:	N/A	25	25	N/A	N/A
Ten Percent of County Budget:	N/A	1174	1014	N/A	N/A
DOVER AFB Emissions:	151	841	141	618	91

Previous Year

Next Year

Exit

County Emissions Inventory Year is 2002
 Installation Emissions Inventory Year is 1996
 County Attainment Status Year is 2002
 Ozone Transport Region: YES
 PSD Class I Area: NO

Uncontrolled NOx Burners Operational Scenario

Boiler/Heater Criteria Factors	
Select Category	
7	
Type	Industrial/Commercial (0.3 to 100 MMBtu/hr)
Firing Configuration	NA
Fuel Type	Natural Gas
SCC	10200602
Control Type	Uncontrolled
Units	10 ⁶ ft ³ /yr
Emission Factors (lb/10⁶ ft³)	
SO2	0.6
NOx	100
CO	84
VOC	5.5
PM10	7.6
OK Cancel	

Boiler Information	
Installation	DOVER AFB
Category	7
Check/Change Category	
Boiler Number	Various boilers
Fuel Type	Natural Gas
Yearly Throughput	231
Throughput Units	10 ⁶ ft ³ /yr
Boiler Period Begins:	
Year:	2006
Quarter:	4
OK Cancel	

Uncontrolled NOx Burners Operational Scenario

Conformity Screening Assessment

Conformity Code: **GREEN** (Conformity determination is not required based on applicability screening.)

DOVER AFB

Tons/Year Emissions For 2006

	CO	NOx	VOC	SO2	PM10
Proposed Action Emissions:	7	9	1	0	9
De Minimis Thresholds:	N/A	25	25	N/A	N/A
Ten Percent of County Budget:	N/A	1174	1014	N/A	N/A
DOVER AFB Emissions:	151	841	141	618	91

Previous Year

Next Year

Exit

County Emissions Inventory Year is 2002
Installation Emissions Inventory Year is 1996
County Attainment Status Year is 2002
Ozone Transport Region: YES
PSD Class I Area: NO

Conformity Screening Assessment

Conformity Code: **GREEN** (Conformity determination is not required based on applicability screening.)

DOVER AFB

Tons/Year Emissions For 2007

	CO	NOx	VOC	SO2	PM10
Proposed Action Emissions:	10	12	1	0	1
De Minimis Thresholds:	N/A	25	25	N/A	N/A
Ten Percent of County Budget:	N/A	1174	1014	N/A	N/A
DOVER AFB Emissions:	151	841	141	618	91

Previous Year

Next Year

Exit

County Emissions Inventory Year is 2002
Installation Emissions Inventory Year is 1996
County Attainment Status Year is 2002
Ozone Transport Region: YES
PSD Class I Area: NO

USAF Air Conformity Applicability Model

Emissions Summary Information

Scenario: Central Heating plant Demolition Project

Installation: DOVER AFB

Emissions Summary Report For 2006

Source Category	Emissions, Tons/Year				
	CO	NOX	SO2	VOC	PM10
Area Sources					
Demolition	0.00	0.00	0.00	0.00	1.31
Other Phase I Const. - Grading Equip.	0.07	0.25	0.03	0.03	0.02
Other Phase I Const. - Grading Ops.	0.00	0.00	0.00	0.00	7.28
Total	0.07	0.25	0.03	0.03	8.61
Point Sources					
Boilers	7.28	4.33	0.05	0.48	0.66
Total	7.28	4.33	0.05	0.48	0.66
Grand Total	7.34	4.58	0.08	0.50	9.27

USAF Air Conformity Applicability Model

Emissions Summary Information

Scenario: Central Heating plant Demolition Project

Installation: DOVER AFB

Emissions Summary Report For 2007

Source Category	Emissions, Tons/Year				
	CO	NOX	SO2	VOC	PM10
Point Sources					
Boilers	9.70	5.78	0.07	0.64	0.88
Total	9.70	5.78	0.07	0.64	0.88
Grand Total	9.70	5.78	0.07	0.64	0.88

USAF Air Conformity Applicability Model

Conformity Screening

Scenario: **Central Heating plant Demolition Project**

Installation : **DOVER AFB**

Conformity Code **GREEN** (Conformity determination is not required based on applicability screening.)

DOVER AFB

Tons/Year Emissions For 2006

	CO	NOX	VOC	SO2	PM10
Proposed Action Emissions:	7	4	0	0	9
De Minimis Thresholds:	N/A	25	25	N/A	N/A
Ten Percent of County Budget:	N/A	1174.2	1013.8	N/A	N/A
DOVER AFB Emissions:	150.8	840.7	140.7	618.3	90.9

County Emissions Inventory Year is 2002

Installation Emissions Inventory Year 1996

County Attainment Status Year is 2002

Point of Contact Information

Air Agency/AQCD **DEPARTMENT OF NATURAL RESOURCES**

Person: **JOHN THOMAS**

Phone: **302-323-4542**

USAF Air Conformity Applicability Model

Conformity Screening

Scenario: **Central Heating plant Demolition Project**

Installation : **DOVER AFB**

Conformity Code **GREEN** (Conformity determination is not required based on applicability screening.)

DOVER AFB

Tons/Year Emissions For 2007

	CO	NOX	VOC	SO2	PM10
Proposed Action Emissions:	9	5	0	0	0
De Minimis Thresholds:	N/A	25	25	N/A	N/A
Ten Percent of County Budget:	N/A	1174.2	1013.8	N/A	N/A
DOVER AFB Emissions:	150.8	840.7	140.7	618.3	90.9

County Emissions Inventory Year is 2002

Installation Emissions Inventory Year 1996

County Attainment Status Year is 2002

Point of Contact Information

Air Agency/AQCD **DEPARTMENT OF NATURAL RESOURCES**

Person: **JOHN THOMAS**

Phone: **302-323-4542**

USAF Air Conformity Applicability Model

Scenario: Central Heating plant Demolition Project

Installation: DOVER AFB

Receiving Installation Details

Inst. ID	ZIP Code	County	State	Employees
130	19902	KENT	DE	8417

County Emissions (tpy)

Inv. Year	CO Total	NOx Total	VOC Total	SO2 Total	PM10 Total
2002	39646	11742	10138	5248	6800

Installation Emissions (tpy)

Inv. Year	VOC Total	NOx Total
1996	140.7	840.7

CO Total	SO2 Total	PM10 Total
150.8	618.3	90.9

Emissions Drivers

Residential Heating	Facility Heating
JP-8 0.12 MMBTU/resident year	84,000 BTU/sqft
Fuel Type Heating	New Employees Living on Base
JP-8 0.12	0.0%

One-Way

Commute	GOV VMT Annual	Facility Heating by Central Plant
1.00 miles	250.00 miles/per	0.0%

County Attainment Status

Status Year	Transport Zone	Ozone Status	NO2 Status	SO2 Status	PM10 Status	CO Status
2002	YES	NON	UNC	ATT	ATT	ATT
PSD Area	Ozone Class	NO2 Class	SO2 Class	PM10 Class	CO Class	
NO	SEV	NA	NA	NA	NA	NA

Mobile6

Inspection and Maintenance Program:

Enhanced

Fleet-Mix	POV	GOV		POV	GOV
LDVP	0.773	0.346	HDV5	0	0.008
LDT1	0.05	0.028	HDV6	0	0.031
LDT2	0.168	0.094	HDV7	0	0.036
LDT3	0	0.071	HDV8A	0	0.039
LDT4	0	0.033	HDV8B	0	0.141
HDV2B	0	0.138	HDBS	—	0.007
HDV3	0	0.014	HDBT	0	0.003
HDV4	0	0.011	MC	0.009	0

Point of Contact Information

Air Agency/AQCD:

Person: JOHN THOMAS

Phone: 302-323-4542

APPENDIX B
BASE WETLANDS MAP

Dover Air Force Base Wetland Location Map

